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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,102	02/04/2004	Sujeet Kumar	2950.21US02	4854

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EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/772,102

Applicant(s)

KUMAR, SUJEET

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 16-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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This action is in response to applicant's amendment of 19 October 2004. The amendments to the specification have overcome the objection to the disclosure and the 35 USC 112 rejections. The amendments to the claims have overcome the art rejections over claims 1-14 and the art rejection based on U.S. patent 6,153,123. Applicant's arguments with respect to the remaining rejections have been fully considered but they are not persuasive.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 16 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. patent 4,478,800.

This reference teaches forming metal sulfides by reacting metal oxides with H₂S at a temperature of 200-700°C, where the metal oxides have a particle size of less than 40 nm (col. 4, lines 5-21 and col. 9, lines 5-12). Column 4, lines 57-65 teach the mass and size of oxide particles do not change during sulfurization and thus the particle size of the taught metal sulfides would be the same as that of the metal oxide from which it is formed. The reference clearly teaches the claimed process.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 4,478,800.

As stated above, this reference teaches the claimed process. The taught heating temperature of 200-700°C overlaps the claimed range. Process claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re*

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Fields 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed process.

Applicant argues this reference does not teach a collection of particles, but nanostructured coatings. This argument is not convincing since the reference clearly teaches finely divided particles on the support (col. 4, lines 17-19 and lines 57-60, the methods in columns 7 and 8 and the examples). The claims are to a method of making sulfide particles by treating metal oxide particles as is the reference. The claims do not state where these particles are located and thus does not exclude particles on a substrate. The rejection is maintained.

Claims 16 and 17 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. 6,447,577.

This reference teaches forming metal sulfides by reacting metal oxides with H₂S at a temperature of 40 or 120°C, where the metal oxides have a particle size is at most 100 nm (col. 2, lines 40-49 and examples). This is the identical process as that of claims 16 and 17, therefore, one of ordinary skill in the art would expect the taught sulfide particles to inherently have the same particle size as that of the metal oxide from which it is formed, absent any showing to the contrary, especially in light of the teaching of U.S. patent 4,478,800. The reference clearly teaches the claimed process.

Applicant argues that the particles are not particles but nanostructured materials bound to a support. The Examiner is unable to find support for this assertion. The reference repeatedly refers to nanoparticles. Applicant argues the patents discussed in column 3 of the reference do not make nanoparticles, but nanocrystalline coatings on substrates. This is incorrect. U.S. patents 6,087,294 and 5,759,939 teach nanosized particles where the surface of these nanosized

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particles have been modified or coated. Patent 4,877,647 teaches the process for making a colloidal solution from colloidal or nanosized particles. The rejection is maintained.

Claims 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,090,200.

This reference teaches nanosized metal sulfide phosphor particles. The phosphors have a particle size in the range of 1-30 nm (col. 2, lines 39-40), which means the average size in this range. The taught average particle size range overlaps that claimed. While the reference does not teach the amount of dopant in the taught particles, it is notoriously well known in the art that the amount of rare earth dopant in taught metal sulfide phosphors is less than 20 mol% relative to the total metal content in the phosphor. This amount overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

Column 5, lines 26-29 teach the phosphors can have the formula ZnS:Eu, ZnS:Tb, SrS:Ce, or CaS:Tb. Column 7, line 49 states the particles have a very narrow size distribution. The example demonstrates this by showing the phosphors have an average size of 2.5 nm and the particles all fall within the range 2-3 nm. Thus there would be no particles present which have a diameter greater than 5 times the average size and all the particles have a diameters which are greater than 40% of the average size and less than 225% of the average. The exemplified particles are within the range of 80% of the average up to 150% of the average. The reference suggests the claimed rare earth doped metal sulfide particles.

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Applicant argues that the taught particles have an average particle size of 10 nm because of the teaching in column 3, lines 10-13. The argued range of about 2.5-10 nm is the preferred range. Nonpreferred embodiments can be indicative of obviousness. *Merck & Co. v. Biocraft Laboratories Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1989); *In re Lamberti* 192 USPQ 278 (CCPA 1976); *In re Kohler* 177 USPQ 399 (CCPA 1973); *In re Mills* 176 USPQ 196 (CCPA 1972); *In re Bozek* 163 USPQ 545 (CCPA 1969); *In re Meinhardt* 157 USPQ 270 (CCPA 1968); *In re Boe* 148 USPQ 507 (CCPA 1976); *In re Nehrenberg* 126 USPQ 383. The rejection is maintained.

Claims 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,699,406.

This reference teaches rare earth doped metal chalcogenide phosphor nanoparticles. The amount of rare earth dopant is up to 60 mol%, which overlaps the claimed range. The particles have a size in the range of 1-100 nm (col. 5, lines 60-63), which overlaps the claimed range. This reference suggests the claimed particles because sulfide is a chalcogenide.

Applicant argues the taught crystallite size is not the size of the taught nanoparticles. One of ordinary skill in the art would be expected to know that “crystallite” and “nanoparticle” are interchangeable, as in U.S. patent 6,090,200. The rejection is maintained.

Claims 1-14 are allowable over the cited art of record.

These claims are allowable since they include subject indicated as allowable in the previous action.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (571) 272-1362.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
November 1, 2004


C. Melissa Koslow
Primary Examiner
Tech. Center 1700